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# Purchasing Supplies

*for an*

## Office Building



*By*

**J. M. WALSHE**

Manager State National Bank Building  
Little Rock, Arkansas

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When the first proposal to manage an office building was made to me, I was in the Electric Contracting business in Texarkana, and though the proposition came from a friend, who I am sure now, had only my interests at heart, I hesitated and debated the question in my own mind for some time, trying to see that it wasn't a joke (I had never heard of a Building Manager), and that such a position was not less dignified than the one I thought I was entitled to. After some close consultation with other friends, I decided to accept the "job." I was bundled off to St. Louis to look over the buildings there, and to gather as many ideas as possible on the systematization, operation, and maintenance of an office building. It was there I met a very reserved manager, who immediately, through his bearing and manner, relieved me of any sense of a building manager being a joke. By a little diplomacy, and showing that I was really interested in the matter, this quiet man, Mr. Guy Wright of the Wright Building, St. Louis, and his able corps of as-

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sistants opened up their wells of information, and in a week I had absorbed more concerning the management and maintenance of an office building than I ever knew existed. Needless to say I went back to Texarkana with an entirely different feeling toward the position of Building Manager than when I left.

My first task was the systematization of the operation end of the building, and in about a month I had been able to establish a very good order of things, which proved most efficient.

Passing over this initial period to the time when I had an opportunity to take up the purchasing of the supplies used in the building, I will try to tell you what I found and how it was remedied; but before going into the details of this matter, I will ask you to bear in mind that one of the things we have to contend with in the Southwest that is most discouraging, is the high rate of freight we have to pay, and you will note all through my paper that the prices are based on this freight rate, which has been taken into consideration, and undoubtedly you who live near manufacturing centers, and in the East, will be able to get much better results in the price line than we have, on this account.

On my daily rounds of inspection, I noticed a great quantity of toilet paper on the floors of the toilet rooms which led me to investigate the cause. I found that these sheets were pulled off in bunches, either maliciously or abstractedly, or that the paper rack in one toilet would be empty, and the next man in would grab a handful of paper out of the other toilet, and leave what was left on the tank or throw it on the floor. To try to overcome this latter part of the loss, I had the janitor leave an extra bundle of paper in each toilet for such an emergency, thinking that the tenants would be glad to put it in the rack when the other paper was out, but Oh, my,

how mistaken I was. The extra roll was either stolen, thrown in the closet, or the wrapper taken off and littered over the floor. I looked hard for some system to overcome this, and sent for samples of several makes of racks, and after carefully looking into the merits and demerits of each and every one, I applied a test which gave them all equal advantages in showing their economy and efficiency. I selected a toilet room on a floor that was leased to a large railroad company. I put on one rack at a time, and kept a close record of each for thirty days, and I give you here the results of that test:

Name.	Rolls per mo.	Cost per roll.	Total.
Springfield .....	4½	6 c	27c
Boston Oval .....	4	6 c	24c
Onliwon .....	11⅓	8¾c	11c

This gave us a clear saving of 13c per toilet per month, and we tried it several times in several places to prove it. In addition to this saving, we found a great many other advantages in this package—one, and the most important one, was the fact that the rack could be refilled with a new roll before the other was out, and it required no mechanical device whatever to operate it; also that it was impossible to get over two sheets at a “pull.” The paper was kept clean and in a sanitary condition at all times. We installed this system throughout the building, and were exceedingly well pleased with the results. We tried many other papers, some that cost as low as three cents per roll, but we found from a basis of efficiency that the above named papers were about the only ones worth considering of those that we tried. I am still unable to account for the fact that a roll with one thousand sheets, delivering two sheets at a time, should be more economical, and last longer than a roll with five hundred double sheets, delivering one at a time, nevertheless it seems to be a fact.



In the matter of feather dusters, I have had many interesting remarks passed in communicating with managers throughout the country, and in one case especially, I asked the question, "Do you use feather dusters?" and got this reply, "Yes, damn 'um," which remark seemed to me quite appropriate.

We had been buying dusters of the one hundred feather 16 inch size in half dozen lots, at 75c each, and it seemed as though we were constantly buying dusters. I noticed two things—one that the handles were always gone, and the other that the dusters were thrown away when about half worn out. I put on a careful test on the dusters of different kinds and types, and finally selected a duster with 150 sixteen inch tail feathers, wire bound with leather glove and a short stub handle, at \$9.00 per dozen, as giving the best results, and this gave us a saving of about 60% on our duster bill, and we were able to use all the old dusters on the grill work in the elevators. By all means use a duster with a stub handle.

In reply to a list of questions I sent to certain Building Managers throughout the country, in reference to the supplies, I found that they were all using cheese cloth for cleaning rags, paying an average of 3½c per yard by the bolt. I had tried cheese cloth but gave it up when I found that I could buy clean, white, sanitary rags in bales at 6c per pound, and that these rags saved me over 50% of my cheese cloth bill, and, in addition, to my great surprise, found that after their usefulness up stairs was over, if they were washed, they made excellent cleaning rags for the machinery in the basement; so we not only saved in cost of the cheese cloth, but almost entirely eliminated the cost of waste in the engine room. We distributed the rags in one pound lots.

Next, I found that we had been buying our



toilet soap from the barber shop in the building. This was the soap that was left over after a person took a bath, and as each bather was furnished a new one ounce bar in its original package, there was considerable left, for which pieces we paid one cent a cake. After devoting a little time to this, I found that I could buy toilet soap of an excellent quality in two ounce packages at three dollars per gross, and have the name of the building on each cake, also a special color that would not be sold to any one else in town, so that we could distinguish our soap wherever found. This fact soon became noised around town, and we found that our soap supply lasted from two to three times longer than previously. Our janitors have instructions to pick this soap up whenever found in the offices and replace it in the toilet rooms, as we supply soap in the toilet rooms only, and allow the Towel Supply Company to furnish it in the offices. I am doing much better than this now, however, but still retaining the color scheme. By making a contract with the Towel Supply Company, giving them exclusive rights in the building, they furnish us twenty-five clean towels every day for use in our toilet rooms, and sell us the same soap at \$2.00 per gross, for which we had been paying \$3.00.

The mop question is a much debated proposition, and I am sure that every Building Manager will be interested in our solution of this problem. We were paying 50c to 70c each for cotton string mops with handles, and carried no stock on hand, from the fact that each janitor or janitress wanted a different weight and a different size according to their strength and ability to handle it. I had been told to buy mop yarn in bales. After some careful study and making many inquiries, I found I could buy mop yarn in balls from the Estes Mills Company, Fall River, Mass., at 12½c per

pound, and could make up any size or weight of mop that I needed, eliminating the necessity of carrying a large stock and many sizes. This required getting a mop stick that would hold the strands of the mop without their being sewed. This I found in the Ely mop stick number 8, which fastened and held the mop yarn tightly without being sewed, and the stick outlasted many mops.

We had been using sweeping compound on the floors of the corridors, and in the banking room, and were paying from \$3.50 to \$6.00 per barrel for it, and being French, like my friend Doyle, I was sure that somebody was buying Standard Oil stock with his profits from this gold brick, so I tried different methods of making this ourselves, and found that by taking some good, hardwood sawdust mixed with one-third clean river sand sprinkled with a good grade of disinfectant and some coal oil, a mighty good sweeping compound was produced, and gave the desired results at a cost of about 50c per wagon load. I might add that I have since discarded the use of sweeping compound entirely; having found that it was really of not much practical use.

We used push brooms on the tile floors of the corridors, and paid \$2.75 each for a twenty-four inch Russian bristle brush with a pretty red back and handle. I kept my eyes open on this for over a year, and talked with everyone I thought knew anything about brooms or brushes, but to no avail, until I accidentally found one that entirely suited my every need, being manufactured right in Little Rock at \$12.00 per dozen, and also found that these same brooms were being supplied to all the large wholesalers, but it took me over a year to find it. I received a little post card once that particularly applies to this push broom proposition, and on the post card was printed in red letters, "I'll do anything once; if I like

it I'll do it again"—and this I thought was particularly applicable to the purchasing of supplies.

With reference to corn brooms, I must say I have had little, if any, success in economy, except that I can now look at a broom and judge pretty well how good or bad it is. I find that a good, clean corn broom at about \$5.50 per dozen with five strings or a metal cap will give me the best service I have been able to get.

In the matter of powdered soap, I have been experimenting carefully for nearly a year, and have tried many kinds and makes and am still searching for something better. The best results I have been able to obtain have been with Wyandotte Detergent, made by the J. B. Ford Company, for the tile floors, which costs about 4c per pound, Marblica, made by the India Alkali Works, for the marble, and Lustro, made by Armour and Company, for the wood work. Where the tile and marble floors cover considerable area, and where the corridors are wide and long, I strongly recommend the use of the scrubbing machine and water absorber as being very economical and giving very good results. You need not, however, expect to put this machine into the hands of an inexperienced janitor to work out his own problem with it—it requires careful and systematic operation and instruction in handling it in order to get the desired results. It is queer how some things come up unexpectedly, and from what sources they originate. When I wrote the first copy of this paper, I made a note in it to this effect:

“Right here I want to ask some one who has found a real successful window cleaner to let me hear from him, as I have not been able to do so.”

This was about four weeks ago, and a few days after, a young man from the bank walked

into my office and showed me a little package that he called a window cleaner, and asked if I had ever tried it. I told him no, that it did not look good to me, but that I would be very glad to give it a trial. He said a friend of his had bought two or three cases at a railroad wreck, and if I could use it, he would make me a very low price. I turned it over to the window washer, and am pleased to advise that his records show that he was able to wash, clean and polish most successfully over 150 windows with this one package of "Aisa" window cleaner, which cost me 3½c per package, and I found that the windows were thoroughly cleaned and had a very fine polish. I also discovered that the reason he had to stop when this number of windows were washed was because the cloth wrapper or bag had worn out. He is now experimenting with another bag on the outside of the original package and uses it this way. I am quite sure that this is going to solve the window cleaning problem, but nevertheless, I would still like to hear from some one who has successfully met this problem.

Most buildings have to use considerable metal polish and it is very expensive, and very easily wasted. I think perhaps, I am somewhat of a crank about having metal around the building clean and polished and kept that way—and for this reason, I have been more careful in trying to find a good polish that would keep bright for the longest period of time. I have tried everything that has been brought to my notice and found that I got very good results from using Pix unburnable metal polish. This polish gives a high luster—is unburnable—does not evaporate, and does not contain ammonia or other acids that are unpleasant to use. It puts on a finish that lasts an unusually long time, and costs about 70c per gallon. I find also that if you will take a piece of cotton cloth soaked in castor oil, and

rub it over the surface of the brass just after it is polished, then rub the brass off thoroughly with a dry rag, that a thin coat of oil will have formed over the brass, preserving it in this condition for a very long time.

Almost every building supplies towels in the toilet rooms. My experience has been that quite a number of these towels are missing from time to time, and at the end of a year, it makes quite a fair size item. To overcome this stealing in my present building, I bought a special towel rack that locked the towels on the roller bar with a key, making it impossible for any one to take a towel off the rack without a key, or without cutting it, which it is improbable they will do.

Next, I took up the engine room, and here, gentlemen, I had to fight for every concession. The engineer was an old time steam man, and was absolutely sure that he knew all there was to be known in that end of the business, and would not allow any upstart to tell him or show him what he ought to do. He was not very much pleased with my being put in charge, and was therefore not inclined to assist me very much, but after studying the man and the conditions for a while, I insisted on certain reforms and radical changes in the installation and general system of handling this department. We had two direct connected engines and generators and the erecting engineer who installed the plant had advised the engineer to keep a pretty good load on the engines all the time in order to make them do their work well. He seemed to give absolutely no consideration to the matter of efficiency, or of economy of operation. I therefore proceeded at once to find out just what point these engines would operate most economically. I cut the day load down to a point where we got the greatest efficiency out of our lighting plant during the day. Then I went into the boiler proposition. We were



using natural gas under a pressure of eight ounces at 11c per thousand feet, and our records were showing very poor efficiency, so we experimented first with one boiler for a month, then the other, changing the burners, draft, and damper connections, baffle and fire walls, until we found how we could get the greatest efficiency at the least cost, and in this experiment found that we could get much better results from home made burners than from any of the manufactured ones that we had seen or tried, and we cut our gas bill from \$355.00 per month to \$256.00. I made these tests by checking the reading of the wall meters, which I had put on each generator panel of the switchboard, and the water meter on the boiler feed line against the gas meter.

I noticed that we were using considerable cylinder oil in the engines—about two barrels per month, at 80c per gallon, using twenty-eight drops per minute in the larger engine and twenty-two drops per minute in the smaller engine. This seemed considerable to me, but the engineer insisted this was the least amount of oil on which he could run this engine safely. Not being satisfied, however, I wrote to the makers of the engines and asked their recommendation as to the kind of oil to use, and how to tell when the engines were receiving the right amount of oil. They took pleasure in telling me all I wanted to know on this point, and in trying to put their recommendation into practice, notwithstanding the economy that would possibly result, and that no possible harm could come to the engine, if carefully watched, the engineer became very antagonistic and took the matter over my head to the President of the Building Company, telling him that he had been an engineer all his life, and knew more about engines in a minute than I did in a week, and that if I was allowed to proceed, I would surely ruin the engines, and cause the Building Company con-

siderable annoyance and expense. I insisted, however, and after some threatening, tried the scheme out, and in a month we had cut the supply of oil to the large engine from twenty-eight drops per minute to six drops per minute, and on the small engine, from twenty-two drops to four drops per minute, and the engines were running with plenty of oil, and to the best of my knowledge are still running this way. Oil to most men is an unknown quantity, and its sale mostly depends on how good a fellow the salesman is, or whether he belongs to the same lodge. There is a simple test that you may apply to the different oils you use to try their lubricating qualities.

Procure as many light watch crystals as you have samples, fill each of the crystals with a different oil, and place them in an oven temperature, say 75 or 80 Fahr. In the course of a few days, giving them an opportunity to absorb oxygen, test by taking an ordinary pin with a large head, dip the head end of the pin into the center of the oil, lifting it up slowly, you will then notice that there is a good deal of difference between them. Some will drop clean off the head of the pin, others will string out, connecting the pin to the surface of the oil; while others have become so thick that the pin head will attach itself to the heavy coating on the surface of the oil, so that the crystal and its contents can be almost lifted up and held in suspension.

Amongst the various samples, try castor oil and ordinary kerosene, you will notice that both of those named will free themselves from the pin head at once—the first named somewhat slowly, by reason of its natural viscosity, and the second quickly, by reason of its fluidity. The reason for this is that the castor oil and kerosene do not absorb oxygen freely, and therefore do not thicken. The castor oil will, in the course of time, become rancid, but its lubricating qualities are not greatly injured by



the rancidity. Kerosene, of course, has very little lubricating value, and the comparison is made simply to show the action of the atmosphere on them.

All the commercial lubricating oils that are offered today have a petroleum base, and their value is increased by the amount of animal or vegetable fat they contain. The animal fats are tallow, lard oil, fish oil, and neats-foot oil. The vegetable oils are more numerous, such as olive, palm, cotton, corn, rape, etc., etc. All the above mentioned fats can be readily mixed with the mineral or petroleum oils, the mixing of which is an art in itself, and no general receipt can be given for combining them. As a rule most of them are mixed together in a heated condition; if mixed cold, they will not hold in solution, owing to the difference in their specific gravity. The temperature varies in every case, and with each different fat. Castor oil will not mix with petroleum oils under any condition.

The oil that will not readily absorb oxygen is a good lubricant, and the oil that does so, is a poor one. The oil that absorbs oxygen freely, fires spontaneously, and becomes a source of danger. Linseed oil, rape oil, olive oil, lard oil, tallow oil, will fire spontaneously, with a slight rise in temperature. Saturate pieces of cotton waste with each of those named, press all the oil out of the cotton waste until it is comparatively dry, place the different samples of saturated cotton waste directly under the sun's rays, and you will find that they will fire in about the order named, or place them in a temperature of about 90 Fahr. and they will fire in from four to eight hours' time. The greatest danger comes from the piece of cotton waste lightly saturated with linseed oil, or as is frequently the case, a mixture of linseed oil and turpentine; hence the great danger following the average painter, who carelessly throws his cotton waste about

without any thought of what may follow. (Hence the reason why Insurance Companies insist on certain precautionary measures.)

A great many experiments have been made and a great deal of discussion has taken place over the relative value of solid and liquid lubricants. A great many oiling devices are on the market for both solid and liquid lubricants, and as a general rule, wherever a liquid lubricant can be fed regularly, it is better than a solid lubricant, unless it be on a heavy, slow moving bearing, whose great weight practically squeezes all the lubricant out, hence we find that all heavy engine shafts are generally lubricated by solid lubricants, supplemented by an occasional drop of liquid.

Makers of solid lubricants claim greater economy over liquid lubricants, and while this may be perfectly true as far as the oil account is concerned, the economy is procured at the expense of the power and fuel account.

I think that every engine room, no matter how small, ought to be equipped with an oil filter, for any good grade of oil can be filtered and used over again, possibly once, and sometimes twice, and then the residue from the filter makes a very good lubricant for the elevator guide, if properly mixed with flake graphite.

In buying an oil filter, however, I would advise there is no economy in buying a cheap, imperfect one. I would strongly suggest purchasing the very best on the market, and one which has well made parts, and is made up on good mechanical lines.

We were purchasing our water from the Water Corporation, and after getting a reading on the water meters every day for a month, I tried several experiments with leaky faucets, and these all showed such a considerable saving that I found it expedient to have every leaky faucet in the building repaired at once, and arranged to keep them so. This reduced

our water consumption from 10,000 to 6,000 gallons per day, which more than paid us for the trouble. In my present building, they found during construction, a number of springs in the sub-basement which seemed apparently of a good quality of water, and which it was contemplated pumping into the sewer. After some study it was decided to save this water for use throughout the building.

This was done in a very simple and easy manner, and after having two chemical analyses made, we are using it now in the building for every purpose except drinking water, and have all we need, throwing away over 300 gallons per hour besides. This saves us over a hundred dollars per month water bill, and costs only the amount of power required to pump the water to the roof, which is very small as we would have had to pump the water part of the distance anyway.

The coal question is one to which I have given considerable thought, possibly because I had an option on 4,000 acres of Lignite coal in Texas, which I thought would some day make me a little extra pin money, but my balloon burst, because the coal slacked so quick that it could not be shipped. In our country where it is considered that we have the best steam coal in the world, we are unable as yet to purchase on the B. T. U. contract basis, the dealers not having arrived at this point yet. Arkansas coal varies considerably, being high in B. T. U. and low in ash. It is a very fine steam coal, but a poor, slow burner. Being unable to buy on a guarantee B. T. U. basis, and not using coal enough to warrant having an analysis made, we experimented with all the different coals in the field for short periods of time until we found which coal would evaporate the greatest amount of water per ton and leave the least amount of ashes. As a little instance of how easily a man is sometimes fooled in the purchase of coal, I want to tell

you that I have a little hot water heater in the building which works under practically the same conditions every day in the year, and in carrying on a series of coal experiments, with this heater, we found that one ton of coal costing \$4.50 lasted six days and a half, while another ton costing \$6.00 lasted twelve days, showing a saving of about 30% in using the higher price coal. In plants that are not equipped to get fairly accurate records of efficiency, I think you will find it well to check the coal bill with the water evaporation by placing a water meter on the boiler feed pipe and checking the coal against the water consumption, and weighing the ashes one day in each week. By trying the different coals under these conditions, you can get a very good idea of which coal will give you the greatest efficiency.

Now, if you have arrived at a point where you are fairly sure about your coal condition, start experimenting with your fireman until you get him to a point where he knows how to keep a good, even thin fire, and get every possible atom of efficient heat out of the coal.

We could talk this coal question from now till Kingdom come, and I believe that even then there would be some question left unanswered, so I will pass over the balance, and let these suggestions suffice for this dark subject.

Some Building Managers may contend that the oil used on your elevator machinery has no effect on the elevator service, but I am quite sure that it has, and find that I can get better operation out of the elevators because of the lubricating quality of certain oils. I believe castor machine oil is most generally used in the worm gears of the electric elevators, but I found after experimenting with different oils that vegetable castor oil was much the best lubricant. I have tried many experiments, and asked lots of questions of the elevator manu-

facturers, discovering finally that two parts of number 2 castor oil mixed with one part of good dynamo oil, and this whole mixed with one-tenth part of flake graphite, gives excellent results—is a good lubricant, and needs to be changed but once a year. When you change this oil, if you will mix it again with another portion of graphite, you will find it gives excellent and economical results as a guide rail lubricant.

No doubt you have had trouble with lamps being stolen throughout the building. I have never heard of the problem being solved, and I don't know whether my solution is original or not; if it is, I hope you will all adopt it, and that you will find it is successful in keeping your lamps. Some tenants do not seem to have the least hesitancy about taking incandescent lamps out of the building for use in their own homes, and thousands of homes are constantly supplied with these lamps by the office buildings of the country.

When I purchased our lamps we made a contract to have every lamp etched with our name in a circle around the tip end, which showed up very clearly and we figured that it would be improbable that a man would care to have a lamp with our name on it in his parlor; to say the least, it looks rather out of place, and we induced the Electric Light Company to work with us to overcome the theft of lamps, and they instructed their employees that if any etched lamps were brought to them for exchange, that they would refuse to exchange them, and would take the name of the party presenting them and turn it over to us. This immediately, so far as we can tell, stopped all tendency to steal lamps from our building.

No doubt a great many of you have considered the question of baling the waste paper from your building, and I believe it would be a very good thing to do, and am just about to install one in our building. I find that I

can sell the waste paper in bales, F. O. B. St. Louis, at a minimum of 42½c per hundred, and that it can be baled and shipped with all expenses paid for about 20c per hundred. We therefore expect to realize about 20c per hundred pounds. The only bad feature is the fact that we are obliged to find storage room for a carload of paper; this proposition, however, I think can be worked out in a satisfactory manner. I have before me a report from the Nicholas & Spitzer Buildings, Toledo, Ohio, who have had their presses in for some time. I understand that they received about 20c per hundred pounds, or \$4.00 per ton from a local junk man, who called every morning and removed the paper prior to their putting in a waste baler. After putting in the baler, however, they sold it at \$8.00 per ton, and at this price it shows the following revenue:

In six months they sold 26,000 pounds in one building for \$106.80, with a net cost of \$5.00 for freight and expense leaving them a net return of \$101.80 or \$203.60 in one year. The other building sold 37,200 pounds of paper for \$148.80, with a total expense of \$5.00 for freight, etc., etc., leaving a net return for a year of \$287.60.

I have before me some figures compiled by one of the paper press manufacturers which gives the average statement of twenty-two users of paper baling presses, and for your information, I give you this report as it was given to me:

Average time presses in use, 11 months.

Average number of pounds of paper baled, 28,007.

Average gross returns, \$118.50.

Average cost of freight and expense, \$9.45.

Average net returns, \$109.05.

Average net returns, annually, \$157.86.

Average net returns on the investment, 243%.



Also beg to submit herewith a general report of paper baled and sold from nineteen states, as follows:

Connecticut	Iowa
Illinois	Ohio
Kentucky	Maine
New Jersey	New Hampshire
New York	Indiana
Pennsylvania	South Dakota
Tennessee	Michigan
Massachusetts	Minnesota
West Virginia	Wisconsin

Average time presses were in use, eleven months, average number of pounds of paper baled, 23,225; average gross returns, \$92.45, average cost freight and expense, \$7.08; average net returns, \$85.37; average net returns annually, \$98.82; average net returns on investment of 134 presses, 152%.

Personally this looks to me like a very profitable investment, even though there were no cash returns at all, the mere fact of having the paper securely baled and the building kept free from litter and refuse from this source, would seem overwhelmingly in favor of the paper baler.

Last summer at Texarkana, I thought I would get ahead of the paper baler people, by using one of the many hay balers that are on the market, and save about \$35.00 or \$40.00, but after going into the matter very carefully, I found that it took a different type of machine to bale waste paper than it did to bale hay; so I proved to be more of a farmer than I suspected.

There are so many systems of purchasing supplies, and keeping records of them, that it is difficult to set down any hard and fast rule by which to work. I find, however, that every manager I wrote to uses a requisition from the supply room, and a written order to the dealer. In my own case, I keep all the supplies in one



room in the basement in charge of engineer, under lock and key. All material is purchased, on receipt of requisition, by the office on numbered written orders, in triplicate. The original goes to dealer, duplicate remains in office, filed under "supplies heading," and triplicate goes to supply room where it remains on file until goods are received when it is checked, OKd and returned to office to be filed with invoice and voucher. The invoice is thus easily checked by this triplicate copy. Every piece of material is checked in the supply room and kept in its proper place.

For keeping a record of supplies going out, I am just working out a system, the idea of which was conceived from the McCasky Register System, Alliance, Ohio. The form is like a grocery charge tab, containing space for item, amount, weight, floor, and a forwarding and balance column. We use one of these sheets for each kind of article and at the end of each month or period we have an exact record of supplies used on each floor, a permanent inventory and constant check, the recapitulation of which makes interesting study matter. I cannot give you the actual results from practice on this system as yet, but hope to be able to do so in a few months. I have studied it very carefully and believe it will meet every need successfully. All the old tools, supplies, lamps, etc., must be returned to the supply room before new articles are issued.

We have a card index purchasing record and keep records of purchase, date, quantity, freight, drayage, and other necessary items for future information.

In closing, allow me to say that every manager has hundreds of different articles presented to him every year, and he should be always open to be convinced of the merits or demerits of every one, to carefully test and try each new product, for there is no telling which piece of the cake contains the plums. Cost is a secondary consideration where efficiency is evident. I have had

many other interesting deductions, but would not think of taking up more of your time just now.

For your information, I will say that through the application of the above practices I was able to reduce the operating expense in eight months' time from \$2,154 per month to less than \$1,100, and the installation of systematic operation increased the efficiency, cleanliness, and general conduct of the building to such a marked degree that everybody sat up and took notice, and in a short time its vacant offices were being sought instead of seeking.

In my present building the introduction of many new and exceptionally economical ideas during construction, and the same thorough system of operation and control, has practically filled the building before its completion and moved the business section several blocks to our corner. I thank you for your kind attention.



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